

MISSOURI. Conservationist

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Best Winter Show in Missouri

December always seems to be a flurry of days that passes swiftly by amid gatherings of family and friends, holiday traditions, brisk winter walks, and even the possibility of snowflakes falling.



It is truly a magical season. But while holiday festivities may keep us indoors, the splendor of Missouri's winter season is about to be on full display outside.

The bald eagle is one of our country's greatest conservation success stories. The eagle has made a dramatic comeback across the U.S., with Missouri being one of the leading bald eagle states. Every December through February, more than 2,000 eagles take up residence near Missouri's big rivers, many lakes, and abundant wetlands to find food.

The Department hosts several Eagle Days events around the state to take advantage of this winter viewing treasure. These free events include live captive-eagle programs, exhibits, kids activities, and guides with spotting scopes. The best part is watching these magnificent birds perched high in trees along the water's edge take flight to capture food in the water. It is such a glorious sight to behold. The full list of Eagle Days events and locations can be found at short.mdc.mo.gov/ZJA. Learn more about our eagle monitoring efforts on Page 10.

During this season of celebration, I hope you and your family will make time to get outside, bundled up in coats and hats, to see the best winter show in Missouri. It is an outdoor tradition you won't want to miss this December. Happy holidays!

A handwritten signature in black ink that reads "Sara Parker Pauley".

—Sara Parker Pauley, director

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by Janet Haslerig, photographs by Noppadol Paothong

Coordinated efforts help ensure our national symbol stays strong in the Show-Me State

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by Bonnie Chasteen

Essential for wildlife, water quality, and flood control, Missouri's wetlands are making a comeback

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photographs by Bernadette Dryden

December is a great month to try recipes from the Missouri Department of Conservation's popular cookbook

Cover: A bald eagle soars over the Mississippi River near Louisiana, Missouri.
Photograph by Noppadol Paothong.

📷 600mm lens • f/8 • 1/1250 sec • ISO 500

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WHAT IS IT?

Our photographers have been busy exploring the intricacies of outdoor Missouri. See if you can guess this month's natural wonder. The answer is revealed on Page 8.



NOPPADOL PAOTHONG

DEER IN SW MISSOURI

The article on white-tailed deer [*Studying White-Tailed Deer in the Digital Age*; October] reminded me of 1944 when my uncle, Otto Bower, one of the early conservation agents, was trapping deer on the Drury Ranch in Taney County (now Drury-Mincy Conservation Area) and releasing them in McDonald, Newton, Lawrence, and Barry counties. This was the return of deer to southwest Missouri. I was in the first grade in Cassville. He would come by the school and show the class the deer. Then I would get to go with him to release the deer.

Jim Bower, Cassville

QUESTIONS ANSWERED

Thank you for having quick and efficient staff. Kristie [Hilgedick] answered my question about beaver teeth in a short time [AskMDC@mdc.mo.gov]. The *Missouri Conservationist* will always be a great magazine.

I am 77 and my father, Henry Gassmann, my two brothers, John and Russ Gassmann, and I have probably had the magazine through the years as long as it has been published. Thank you again.

Rosalie Schaefer, Louisville, KY

MISSOURI IN THE FALL

What is your first thought when you hear the word "autumn" or "fall?"

When September hits, all the hunters, including me, count down the days until deer season. Deer season, among other reasons, is why I love fall. Have you ever been sitting 15 feet up in a deer stand, waiting for the sun to peek over the horizon? It may not sound substantial or exciting, but when you are up there and it's so bitter cold and quiet you can hear your heart beating, it's just a feeling that cannot be put into words.

When the beginning of October comes around, it's the best time to fish. The water is still warm, but it's not so hot out that it's not fun to fish all day. Being out all day without getting hot is pretty nice, but so is watching the sun set from atop the hills and driving down south to set up for gun season.

Fall is my favorite season.

Jessica Dawn, via email

DUTCH OVEN COOKING

I just attended the Dutch Oven Cooking School at Honey Creek CA today with my two grandchildren and their mother. We had a great time. It was very helpful and the instructor was very informed and fun to listen to. I hope you will have more of these schools to help the public enjoy outdoor cooking.

I also want to thank you for having an area at Honey Creek Conservation Area to ride our horses. We have gone many times and enjoy it every time.

Thank you again for these wonderful services.

Ruth Trimmer, Maitland

MASTER NATURALIST

It was so inspiring and great to read about the work of all our fellow Master Naturalists [*A Lasting Legacy*; October]. It was especially intriguing to read about the outdoor classroom

built and maintained by the Confluence Chapter [St. Charles].

Heather Feeler, your piece is very well written and beautiful to read. And David Stonner, your photos and selections are right on.

We've been nursing our trees potted from saplings and even those started from seed by a chapter member, and my front porch looks like a small forest. I'll miss these little beauties but they are ready for their new forever homes.

*Mary Jo Ostenberg, President,
Loess Hills Master Naturalist Chapter,
St. Joseph*

Reader Photo



LET SLEEPING TURTLES LIE

Matt Morasch of Ashland captured this photo of snapping turtles under the ice of a pond on his property. "They all appeared lifeless, so I broke through the ice with my walking stick and touched the head of one turtle," said Morasch. "He was very lethargic and just turned away." In cold weather, when their metabolisms are slow, snapping turtles can survive under ice without taking a breath for several months. The turtles absorb oxygen from water through the membranes of their mouth and throat. Morasch was able to improve the pond several years ago with advice from the Department. "It was one of the best property improvements I have done," said Morasch.



DEPARTMENT HEADQUARTERS

Phone: 573-751-4115

Address: PO Box 180,
Jefferson City 65102-0180

REGIONAL OFFICES

Southeast/Cape Girardeau: 573-290-5730

Central/Columbia: 573-815-7900

Kansas City: 816-622-0900

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ASK MDC

Phone: 573-522-4115, ext. 3848

Address: Ask MDC, PO Box 180,
Jefferson City 65102-0180

Email: AskMDC@mdc.mo.gov

EDITORIAL COMMENTS

Phone: 573-522-4115, ext. 3847

Address: Magazine Editor, PO Box 180,
Jefferson City 65102-0180

Email: Magazine@mdc.mo.gov

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CONSERVATIONIST STAFF

Editor Angie Daly Morfeld

Art Director Cliff White

Associate Editor Bonnie Chasteen

Staff Writer Heather Feeler

Staff Writer Kristie Hilgedick

Staff Writer Joe Jerek

Photographer Noppadol Paothong

Photographer David Stonner

Designer Les Fortenberry

Designer Marci Porter

Designer Stephanie Thurber

Circulation Laura Scheuler

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"I was looking for birdseed,
but who's gonna argue with hot chocolate and donuts?"

Agent Notes

Activities for Those Long Winter Days

DECEMBER IS OFTEN a time when we relax and spend quality time with family and friends. Our time is usually spent indoors, but there are also many outdoor activities that can be very rewarding. One of my favorites is rabbit hunting.

Some of my fondest childhood memories involved rabbit hunting on my grandparents' property. After dinner, my uncle would usually take a few of us rabbit hunting. We would walk from brush pile to brush pile attempting to jump a rabbit from its winter hideout. Some days we would get lucky and harvest a few rabbits, while other days would just be about spending time outdoors with family on what could otherwise seem like a long, dreary winter day. I always enjoyed the time walking around my grandparents' property, and it didn't seem to matter if we jumped a rabbit or not.

I was very fortunate as a young boy to have property to enjoy with my family and friends. You, too, can enjoy the outdoors with the abundant opportunities the Missouri Department of Conservation provides to the public through our many conservation areas. To find a conservation area near you, visit mdc.mo.gov/atlas.

Justin Emery is the conservation agent for Wright County. If you would like to contact the agent for your county, phone your regional conservation office listed on Page 3.



HUNTING & FISHING CALENDAR

FISHING	OPEN	CLOSE
Black Bass		
Impounded waters and most streams north of the Missouri River	All year	None
Most streams south of the Missouri River	05/28/16	02/28/17
Nongame Fish Giggling		
Streams and Impounded Waters		
sunrise to midnight	09/15/16	01/31/17
Paddlefish on the Mississippi River	09/15/16	12/15/16
Trout Parks		
Catch-and-Release	11/11/16	02/13/17

HUNTING	OPEN	CLOSE
Coyote (restrictions apply during April, spring turkey season, and firearms deer season)	All year	None
Crow	11/01/16	03/03/17
Deer		
Archery	11/23/16	01/15/17
Firearms		
Antlerless Portion (open areas only)	12/02/16	12/04/16
Alternative Methods Portion	12/24/16	01/03/17
Groundhog (woodchuck)	05/09/16	12/15/16
Pheasant		
Regular	11/01/16	01/15/17
Quail		
Regular	11/01/16	01/15/17
Rabbit	10/01/16	02/15/17
Squirrel	05/28/16	02/15/17
Turkey		
Archery	11/23/16	01/15/17
Waterfowl	see the <i>Waterfowl Hunting Digest</i> or short.mdc.mo.gov/ZZx	
Wilson's (common) snipe	09/01/16	12/16/16

TRAPPING	OPEN	CLOSE
Beaver and Nutria	11/15/16	03/31/17
Other Furbearers	11/15/16	01/31/17
Otters and Muskrats	11/15/16	02/20/17
Rabbits	11/15/16	01/31/17

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* and the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, *The Spring Turkey Hunting Regulations and Information*, the *Fall Deer & Turkey Hunting Regulations and Information*, the *Waterfowl Hunting Digest*, and the *Migratory Bird Hunting Digest*. For more information, visit short.mdc.mo.gov/ZZf or permit vendors.

Ask MDC

Address: PO Box 180, Jefferson City, MO 65102-0180
Phone: 573-522-4115, ext. 3848 **Email:** AskMDC@mdc.mo.gov



Gray squirrel

I enjoy feeding the squirrels in my yard. How do squirrels remember where they hide their nuts?

Scientific study has shown gray squirrels retrieve significantly more nuts from their own cache sites than from cache sites used by other squirrels, leading researchers to believe squirrels remember the locations of the nuts they buried.

In addition to memory, scientists also believe squirrels rely on their keen sense of smell to locate long-buried caches of nuts. Stored nuts have no particular ownership, and members of a squirrel community share each other's efforts.

Nuts are more easily detected in moist soil than in dry soil, and unburied nuts

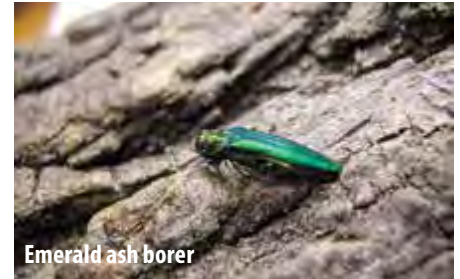
are preferred as long as they are available. Many buried nuts are not recovered, particularly in years of abundance, and a large percentage of them sprout and eventually become trees.

If Missouri has a very cold winter, will it have an impact on the emerald ash borer population?

For the emerald ash borer (EAB) and many other insects, the cold probably will have little effect. Like many insects adapted to temperate climates, emerald ash borers produce a type of antifreeze that helps them adapt to very cold weather. EAB larvae overwinter under ash tree bark, another adaptive

strategy. Temperatures would need to remain below minus 20 for an extended period for significant mortality to occur, and Missouri rarely experiences such cold snaps.

A warm spell in late winter, followed by severe cold, could have a greater impact on insect survival rates. Extended warm spells have been known to cause insects to lose their cold hardiness.



Emerald ash borer

I saw what I thought was a bald eagle — the white head and tail feathers were prominent — flying with four turkey vultures. Why would an eagle soar with vultures? Or was it another type of raptor?

It's not surprising to hear of an eagle soaring with turkey vultures, since both species use thermals — columns of rising hot air — to gain lift and reduce the need to expend energy with vigorous wing-flapping. In addition, these two species happen to eat many of the same things. Bald eagles do eat fish, but a large component of their diet also is carrion, the decaying flesh of dead animals. Compared to fishing, scavenging for carrion requires a lower expenditure of energy.

Some birds "flock up" to find food together, especially in winter, since many pairs of eyes are more efficient than one set working alone. However, this group probably was not working together, said Wildlife Programs Supervisor Sarah Kendrick. It's more likely the eagle happened to join the group riding a thermal, possibly to see if it could take carrion the vultures might find.

Q&A With Director Sara Parker Pauley

Sara Parker Pauley became the ninth director of the Conservation Department on Nov. 1. Her career spans both private and public sector work, including working with federal and state agencies on environmental compliance, policy development, and marketing. As she dives into her new role, we asked her a few questions about what's on the horizon as director and for the future of conservation.



You have a new title on your business card. What excites you most about this new chapter with the Conservation Department?

SPP: What excites me most is also what is the most daunting. It's the opportunity to lead and work alongside such an amazing team of professionals and partners in a field that I am most passionate about, but it's also a critical time in our state and nation's history. The Department's conservation history is filled with great accomplishments, which I'm very proud of, but there is no finish line in this race. Our very quality of life as Missourians depends upon continued

conservation of our natural resources. While there are many challenges ahead, it's inspiring to know I'll be working alongside a great team to face them together.

What are the top items on your leadership checklist as you jump into your new role?

SPP: Meeting and engaging staff and partners, both new and old, is a top priority. We all work best together when we know, trust, and respect one another. I believe strongly in the importance of two-way communication. I want to hear



Sara Parker Pauley was sworn in as director on Nov. 1 by Missouri Supreme Court Judge Laura Denvir Stith. Next to Sara is her husband, Scott.

from staff, partners, and citizens alike to better understand what they believe to be the top conservation issues facing our state.

The most pressing concern in my mind is ensuring the public we serve understands how conserving our fish, forests, and wildlife directly impacts their very **quality of life**.

You began your career at the Conservation Department. How does it feel to come back full circle and work with some familiar faces?

SPP: It really does seem like a homecoming to me. Although many of the faces are new to me, and much younger than mine now, the spirit of the staff remains as vibrant, passionate, and committed as ever to the Department's mission. I'm returning with years of experience gained in the interim that I believe will help me in this leadership role, but in many ways it feels like I haven't been gone very long. It's a great feeling to be back.

The role of director also serves as a conservation leader on a national level. What do you hope to bring to the table at those meetings and conversations?

SPP: Over the years, the Department has been a national conservation leader due to our legacy as a science-driven agency, our world-class staff, and an informed citizenry that has supported sustainable funding. This has allowed us to accomplish critical conservation efforts from research and monitoring, to habitat protection and enhancement, to education and outreach.

I will ensure that we continue to lead in these ways. But I also understand the importance of being part of the national dialogue. I was honored to serve in a leadership capacity with the Environmental Council of the States, an association representing state environmental agencies. In this capacity, I came to understand the impact our state can have on national policy, as well as the benefits our state can gain from the sharing of information, problems, solutions, and lessons learned as we participate in these national conversations.

What are the biggest conservation challenges on the horizon?

SPP: There is no shortage of conservation challenges facing Missouri, from wildlife diseases such as chronic wasting disease, to loss of quality habitat, to the effects of climate change, and nonpoint source pollution. But perhaps the most pressing concern in my mind is ensuring the public we serve understands how conserving our fish, forests, and wildlife, and all of our natural resources, directly impacts their very quality of life. Telling this story more effectively in a way that our citizens better understand, including how conservation impacts them personally in a real and meaningful way, needs to be our highest priority.

On a personal note, as a seasoned hunter and angler, any favorite outdoor spots in Missouri?

SPP: This is a tough one to answer as the landscapes of Missouri are so varied and special in their own way. My family roots are in the Ozarks, so Missouri's pristine Ozark streams, such as the Eleven Point River and Bryant Creek, will always be special places as they are largely connected with childhood memories. I love time afield whatever the activity, but my greatest passion is turkey hunting. Whether I'm turkey hunting in the Ozark hills of Caney Mountain country or the forested and farm landscapes of northeast Missouri, wherever there are turkeys gobbling, that's my favorite outdoor spot!



CONSERVATION COMMISSION ACTIONS

The October Commission meeting featured presentations and discussions regarding the Wild Turkey Research Project, online permits, conservation employees' benefits plan, the financial report, and a status report on major construction projects and information technology projects. A summary of actions taken during the Oct. 20–21 meeting for the benefit and protection of fish, forests, and wildlife, and the citizens who enjoy them includes:

- » **Recognized** the Missouri Stream Team Program for receiving the 2016 Ernest Thompson Seton Award from the Association of Fish and Wildlife Agencies at its annual conference. Stream Services Program Supervisor Sherry Fischer accepted the award for the program and Department.
- » **Gave authorization** to enter into a contract with Gershenson Construction Co., Inc., of Eureka for construction of the Rockwoods Reservation Bridge Replacement Project located in St. Louis County.
- » **Gave authorization** to enter into a contract with Hostetter Construction Co., Inc., of Waverly for construction of the Grand Pass Pump Station and River Intake Repairs Project located in Saline County.
- » **Approved** the advertisement and sale of an estimated 2 million board feet of saw timber on 691 acres of Compartment 5 of the Current River Conservation Area (CA) in Reynolds County.
- » **Approved** the advertisement and sale of 1,273,376 board feet of timber on 499 acres of Compartment 4 of Clearwater CA in Reynolds County.
- » **Approved** the purchase of approximately 185 acres in Stone County as an addition to Wire Road CA.

The next Conservation Commission meeting is Dec. 15–16. For more information, visit short.mdc.mo.gov/ZZe or call your regional Conservation office (phone numbers on Page 3).

Enjoy Winter Trout Fishing

Department staff has stocked 73,000 rainbow trout in 32 urban-area lakes around the state for winter trout fishing. Many of these areas allow anglers to harvest trout as soon as they are stocked, while others are catch-and-release until Feb. 1. Find locations at short.mdc.mo.gov/Zo6.

The daily limit for catch-and-keep at these locations is four trout with no length limit. Missouri residents over age 15 and under age 65 must have a fishing permit. All nonresidents over age 15 must have a fishing permit. To keep trout, anglers of all ages must have a Missouri trout permit.

Buy hunting and fishing permits from vendors around the state, online at mdc.mo.gov/buypermits, or through MDC's free mobile

apps — Mo Hunting and Mo Fishing — available for download through Google Play for Android devices or the App Store for Apple devices. Save time by buying permits for yourself, family, and friends in a single transaction. Select the "Additional Customer" option during your permit purchase.

Discover Nature Through Eagle Days

From December through February, Missouri's winter eagle watching is spectacular. Discover nature with the Department's Eagle Days events around the state or enjoy eagle viewing on your own.

Because of our big rivers, many lakes, and abundant wetlands, Missouri is one of the leading lower 48 states for bald eagle viewing. Each fall, thousands of these great birds migrate south

from their nesting range in Canada and the Great Lakes states to hunt in the Show-Me State. Eagles take up residence wherever they find open water and plentiful food. More than 2,000 bald eagles are typically reported in Missouri during winter.

Eagle Days events are listed below. They include live captive-eagle programs, exhibits, activities, videos, and guides with spotting scopes. Watch for eagles perched in large trees along the water's edge. View them early in the morning to see eagles flying and fishing. Be sure to dress for winter weather and don't forget cameras and binoculars.

- 1 Dec. 3 from 9 a.m. to 4 p.m. and Dec. 4 from 10 a.m. to 4 p.m. at Squaw Creek National Wildlife Refuge south of Mound City. Call 816-271-3100 for more information.
- 2 Jan. 7 from 9 a.m. to 3:30 p.m. and Jan. 8 from 10:30 a.m. to 3:30 p.m. at Smithville Lake Paradise Pointe Golf Course Clubhouse north of Kansas City. Call 816-532-0174 for more information.
- 3 Jan. 14 and 15 from 9 a.m. to 3 p.m. at the Old Chain of Rocks Bridge south of I-270 off Riverview Drive in St. Louis. Call 314-877-6014 for more information.
- 4 Jan. 21 from 9 a.m. to 4 p.m. and Jan. 22 from 12:30 to 4:30 p.m. at the Department's Springfield Conservation Nature Center. Call 417-888-4237 for more information.
- 5 Jan. 28 from 9 a.m. to 4 p.m. and Jan. 29 from 10 a.m. to 3 p.m. at Lock and Dam 24 and Apple Shed Theater in Clarksville. Call 660-785-2420 for more information.
- 6 Feb. 4 from 9 a.m. to 4 p.m. at Mingo National Wildlife Refuge near Puxico. Call 573-222-3589 for more information.



WHAT IS IT?

River Otter | *Lontra canadensis*

River otters live in streams, rivers, and lakes. With streamlined bodies, webbed feet, and long, tapered tails, they are well suited to life in the water. They are graceful, powerful swimmers and can remain submerged for three to four minutes. Their ears and nose close when they go underwater, and their dense, oily fur and heavy layers of body fat keep them insulated. Otters are dark brown with pale brown or gray bellies, while their muzzle and throat are silvery. Males and females look alike, although males are larger. Otters are relatively long-lived, mostly nocturnal, and active all year. Social and generally living in family groups, female otters whelp two to five young in February or March. The young are weaned at 4 months, but stay with their parents until the following spring. On land, otters' burrows may be under large tree roots, beneath rocky ledges, under fallen trees, or below thickets, and are usually former homes of muskrats, beavers, or woodchucks. —photograph by Noppadol Paothong



DID YOU KNOW?

We work with you and for you to sustain healthy forests.

Can't make an Eagle Days event? Other hot spots for winter eagle viewing include:

Lake of the Ozarks at **Bagnell Dam Access**, east of Bagnell

Eagle Bluffs Conservation Area on Route K, southwest of Columbia

Lock & Dam 20 at Canton

Lock & Dam 24 at Clarksville

Lock & Dam 25, east of Winfield

Mingo National Wildlife Refuge, north of Puxico on Highway 51

Moses Eagle Park at Stella

Old Chain of Rocks Bridge, south of I-270, off of Riverview Drive in St. Louis

Riverlands Migratory Bird Sanctuary, east of West Alton

Schell-Osage Conservation Area, north of El Dorado Springs

Squaw Creek National Wildlife Refuge, south of Mound City

Swan Lake National Wildlife Refuge, south of Sumner

Table Rock Lake, southwest of Branson

Truman Reservoir, west of Warsaw

For more information, visit short.mdc.mo.gov/ZJA.

Give the Gift of Conservation

The Missouri Department of Conservation's online Nature Shop makes holiday shopping a breeze for anyone interested in nature-themed gifts. Check out the selection at mdcnatureshop.com.

Holiday shoppers can also skip retail stores and visit one of our nature centers in Kirkwood, Cape Girardeau, Springfield, Kansas City, Blue Springs, and Jefferson City for a surprising array of reasonably priced holiday gifts.

One of the most popular holiday gifts is our annual *Natural Events Calendar*, with 12 months of stunning photos and daily notes about a wide variety of wild happenings throughout the year. Get it from the online Nature Shop or at our nature centers and regional offices.

Conservation makes Missouri a great place to hunt and fish, so give the gift of hunting and fishing permits. Buy Missouri hunting and fishing permits from numerous vendors around the state, online at mdc.mo.gov/buypermits, or through the Conservation Department's free

mobile apps, *MO Hunting* and *MO Fishing*, available for download through Google Play for Android devices or the App Store for Apple devices.

Missouri Forests and Forests Products Industry

» **Missouri has 15.4 million acres** of forestland (one-third of the state) of which the Department manages about 601,510 acres.

» **The majority of the forestland** is privately owned (83 percent). Only 17 percent of Missouri's forestland is held in public trust (12 percent federal and 5 percent state).

» **Last year, 659 million board feet of timber** were harvested in Missouri.

» **The average volume harvested** on Department forestland is about 16 million board feet.

» **The Department conducts timber harvests** on conservation areas to enhance natural plant communities, wildlife habitat, and forest health.

» **Forest management is a long-term commitment** that spans decades and involves forest management practices beyond timber harvest.

» **The key to maintaining the health** of Missouri's forests is sustainable management of private forestland because 91 percent of the timber volume comes from private land.

» **Opinion surveys indicate that 43 percent** of Missourians approve of cutting down trees to make lumber, furniture, or other wood products. Two-thirds of Missourians approve of cutting trees to improve wildlife habitat, and more than 88 percent of Missouri citizens agree with cutting trees to maintain forest health.

» **The forest products industry** contributes \$9.7 billion to Missouri's economy and supports 44,200 jobs at a payroll of over \$2.1 billion (2014 data). In 2015, the industry also contributed \$715 million in taxes, including \$91.5 million in state sales tax.

» **Department timber sales** generate \$2.4 million annually.

» **The Conservation Department partners with the Missouri Forest Products Association** to conduct Professional Timber Harvester Training, which is required to purchase Department timber sales.

» **The Department is working with the Missouri Forest Products Association and the Missouri Loggers Council** to support and promote the Missouri Master Logger Certification program.

» **The Conservation Department partners with Crader Distributing/Stihl** to recognize outstanding work by trained loggers through the Logger of the Year program.





Monitoring Bald Eagles in Missouri

Coordinated efforts help ensure
our national symbol stays strong
in the Show-Me State

BY JANET HASLERIG

PHOTOGRAPHS BY NOPPADOL PAOTHONG



Who you calling bald? With its unmistakable white head and tail, the adult bald eagle is readily identified by the casual observer and avid bird watcher alike. In fact, the bald eagle got its name from an old English word “balde,” which means “white-headed,” not “hairless.” The scientific name, *Haliaeetus leucocephalus*, more accurately describes the bald eagle — the sea eagle with the white head.

T

HE SIGHT OF THE MAJESTIC bald eagle in flight never fails to fill me with awe. This magnificent bird has been a symbol of strength, courage, and spirituality since ancient times, and in 1782 a committee of the Continental Congress selected the bald eagle as our nation's symbol. At that

time, there were an estimated 100,000 nesting pairs in the United States. Sadly, by 1890, bald eagles were nearly eliminated as nesters in Missouri, and by 1963 the bald eagle population was reduced to only 487 nesting pairs nationwide. Habitat loss and degradation, illegal shooting, and pesticide poisoning, particularly by DDT, were to blame. This chemical persists in prey animals like fish, the primary food of bald eagles, and it caused eagles and other birds to produce thin-shelled eggs that decreased hatching success. In 1972, the federal government banned the use of DDT, and in 1978 the U.S. Fish and Wildlife Service (USFWS) listed the bald eagle as endangered under the Endangered Species Act.

Bringing Eagles Back From the Brink

From 1981 to 1990, the Missouri Department of Conservation, in cooperation with USFWS and the Dickerson Park Zoo in Springfield, released 74 young bald eagles in Missouri to reestablish them as nesters. The eaglets were obtained from captive breeding facilities or healthy wild populations and released in good nesting habitat at Mingo National Wildlife Refuge and Schell-Osage Conservation Area.

The bald eagle is the second largest North American bird of prey, surpassed only by the California condor. Bald eagles have a wingspan of 66 to 96 inches and weigh approximately 8 to 14 pounds. As with most raptors, the female is about 25 percent larger than the male.

Retired State Ornithologist Brad Jacobs helped with those early reestablishment efforts. His job was to ensure young eaglets survived and fledged without becoming dependent on humans. "Eagles that imprint on humans can't survive in the wild," he says. "Twice a day, I would climb up a 24-foot ladder carrying several large, frozen trout."

The ladder led up a tower to an artificial nest — a wooden cage — with the young eagles inside. "I would slip the fish through a small door that allowed me to feed them without them seeing me," Jacobs said. "When the eagles were old enough to fledge, around 10 to 12 weeks,

Phoenix — Raising Awareness About Bald Eagles Since 1989

Phoenix was one of the 74 eaglets released at Schell-Osage Conservation Area. Unfortunately, she was unable to survive in the wild. She was taken to the rehabilitation center at the Dickerson Park Zoo, where staff completely rehabilitated her. Phoenix has remained at the zoo since 1989, and she continues to serve as a reminder of the bald eagle's turbulent history and current success in Missouri.

Catch an Eagle Days Event Near You

Missouri's winter eagle watching is spectacular. Attend an Eagle Days event in your part of the state. Find dates, locations, and eagle-watching hot spots at short.mdc.mo.gov/ZJA and on Page 4.



Pam Price of Dickerson Park Zoo holds Phoenix during an Eagle Days program at Springfield Conservation Nature Center.

PHOENIX PHOTOGRAPH COURTESY SPRINGFIELD NEWS-LEADER



we lowered the front gate during the day, allowing them to walk out onto dry branches attached to the tower. At some point, after a week or so, they would let go of the branches and take to the air. Some landed in the pond below and rowed ashore, others landed in a brushy thicket, and some began to rise into the sky. I would carry the wet and crash-landed birds back up into the tower and put them in the cage overnight until they achieved a successful first flight.”

Thanks, in part, to many on-the-ground (and up-a-ladder) efforts like Jacobs’ across the United States, the bald eagle started to recover nationally by the mid 1980s. As a result, the USFWS removed the bald eagle from the endangered species list on June 28, 2007. However, the bald eagle remains protected under the Migratory Bird Treaty and the Bald and Golden Eagle Protection acts, and it continues to be a species of conservation concern in Missouri.

Monitoring Nesting Progress

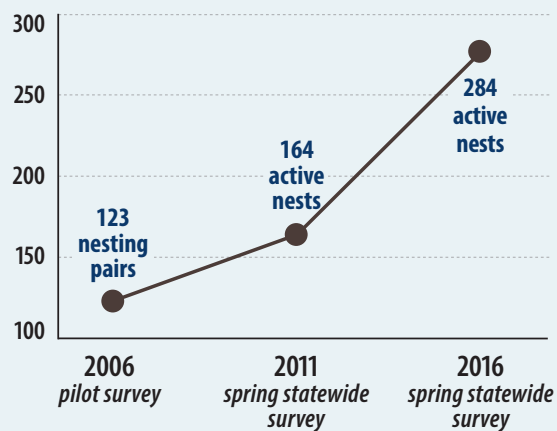
To monitor bald eagles’ progress in the lower 48 states, the Department participates in the USFWS’ post-delisting monitoring plan, which calls for states nationwide to conduct on-the-ground and aerial surveys every five years for 20 years. The Department participated in the pilot study in 2006 to test the plan’s effectiveness before delisting, and Resource Science Division staff have conducted two more surveys since then, one in 2011 and one earlier this year.

Opportunistic foragers, bald eagles eat mostly fish, but they also consume waterfowl, rabbits, turtles, crayfish, mussels, muskrats, and carrion.

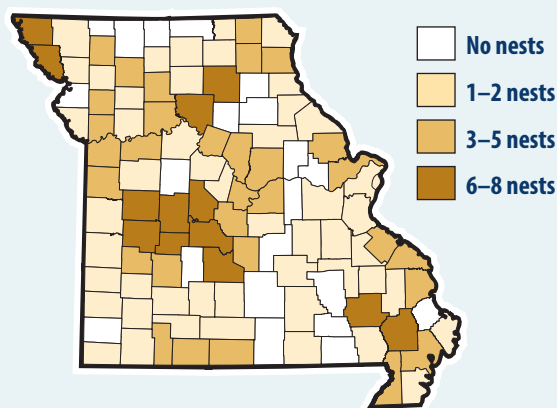
Conducting the surveys every five years takes a lot of preparation and help from both staff and citizen volunteers. For the ground portion of the survey, staff are given a statewide map and spreadsheet listing over 500 total nests in the state. Staff make observations from mid-March through early July, a period of time that covers incubation through fledging. For each nest they see, staff record the date, location, and status, which indicates if the nest is active, inactive, or destroyed. Staff report details they see, such as an adult on the nest, an adult perched in the nest tree, nest not found, nest empty, and so on. This information is very important in determining the current status of individual nests and assessing the state’s nesting bald eagle population overall.

Monitoring volunteer Marsha Jones is the conservation agent for Adair County. A note from her 2016 report illustrates some of the surprises staff encounter during ground surveys. “I needed to acquire the GPS coordinates for one of the four nests on the Chariton River, so I parked my truck and walked out under the tree where the nest is located. I didn’t see anything at first, and then one of the eagles swooped over my head, reminding me not to get too close!”

Nest Numbers on the Rise



Active Eagle Nests



Whether surveying from the ground or up in the air, we make every effort to minimize disturbance to the eagles. With this in mind, we conduct aerial surveys between mid-March and early April when the leaves are just starting to bud. This timing makes nests much easier to see.

I enjoy surveying nests from a helicopter, which gives me a bird's-eye view of the scene. Hovering only about 200 feet above the ground, I can easily look directly into the nest and count the number of eggs or eaglets, or tell what's on the menu for today. Oftentimes, the adults look suspiciously at our mechanical bird without budging. Other times, they fly off to a nearby tree or circle us, immediately returning to the nest when we leave.

Although we conduct statewide ground and aerial surveys every five years, I ask staff for assistance in updating bald eagle records each year. Often, the fate of many of these nests is unknown, and therefore annual reporting updates from staff and the public are essential. I welcome and encourage reports from the public of all active nests in the state.



Author Janet Haslerig surveys bald eagle nests from a helicopter. "The view from above is breathtaking and their success leaves me with respect for this magnificent bird."

Citizen volunteers enjoy monitoring local eagle nests and look forward to it every year. Volunteer Harold John describes his family's first sighting of an active nest near Weaubleau Creek. "When my brother emailed me that there was a nesting pair of bald eagles on our farm, I was very skeptical. We are located almost 10 miles away from the nearest large body of water, Lake Pomme de Terre. But we confirmed that the bald eagles had taken over a red-shouldered hawk's nest and soon started construction of a larger nest. They have since returned to nest for the last five years and have fledged a total of 11 eaglets."

Enriching the Natural Heritage Database

Records of all Missouri bald eagle nests, including those previously destroyed, not found, or inactive, remain indefinitely in the Missouri Natural Heritage Program Database. This database was created in 1981 by collaboration with The Nature Conservancy, the Missouri Department of Natural Resources, and the Missouri Department of Conservation. Through the program, species and natural communities of conservation concern are identified, ranked, and inventoried.

The Natural Heritage data are sensitive, and many species are targeted by illegal wildlife collectors, especially in the pet trade. Therefore, data are shared only through special arrangement, allowing project managers to obtain a tailored and confidential environmental review for project planning purposes. Despite the bald eagle's remarkable recovery, it still faces threats. Each year, eagles die or become wounded from intentional shooting, lead poisoning, collision with vehicles and power lines, and



What You Can Do to Protect Bald Eagles

- » Report injured, killed, or dead bald eagles to your local conservation agent or Missouri Department of Conservation Central Office at 573-522-4115, ext. 3198.
- » Do not disturb active nests.
- » Support organizations that rehabilitate injured bald eagles.
- » Learn more about eagles by reading books, attending events such as the Conservation Department's Eagle Days, and watching eagles in the wild.

Bald eagle nests (or eyries) are among the largest nests of all birds. Typically, nest size is approximately 4 to 5 feet wide and 2 to 3 feet tall. Initial nest building takes one to three months to complete. Living 20 to 25 years in the wild, bald eagles often reuse their nests and add to or "refurbish" them year after year.

other hazards. And degradation of habitat continues to be a key threat to eagles' survival.

Back from the brink of extinction, the bald eagle's recovery is one of the great conservation success stories in the United States. Our coordinated monitoring efforts help ensure that the bald eagle stays strong in the Show-Me State so future generations can look up and feel the awe of this magnificent bird's beauty. ▲

Resource Scientist **Janet Haslerig** is Missouri's bald eagle recovery leader and North America Breeding Bird Survey state coordinator.

Bald eagles typically reach breeding age at 4.5 to 5 years, when they attain their customary white head and tail. The breeding pair share in the incubation and feeding of the young and only have one brood per season. Clutch size is two to three eggs, with two being the most common, and incubation takes about 35 days. Eaglets fledge at 8 to 14 weeks, although they typically remain near the nest for several weeks and are still dependent on their parents for all of their food.



NOPPADOL PAOTHONG

Clarence Cannon National Wildlife Refuge

A photograph of a wetland landscape at sunset. The sun is a bright, glowing orb in the upper center, casting a warm orange and yellow light across the sky and reflecting on the water. The foreground is filled with dense, dark green vegetation. In the middle ground, there are patches of water and reeds. In the background, there are rolling hills and a line of trees. Overlaid on the right side of the image are three stylized bird silhouettes in shades of blue: a large heron-like bird standing, a smaller bird standing next to it, and a third bird in flight above them.

Wonderful Wetlands

Essential for wildlife, water quality, and flood control, Missouri's wetlands are making a comeback

BY BONNIE CHASTEEN



King Rail

B. K. Leach Memorial Conservation Area (CA) in Lincoln County contains 2,302 acres of wetland habitats ranging from early successional marshes to deep backwater sloughs.

of vegetation and other food sources wetlands produce help support plants and animals living in streams and on adjoining floodplains and uplands.

Wetland Redux

Since settlement times, Missouri's vital wetlands have been mostly eliminated or altered. Over 87 percent of the state's original 4.8 million acres of wetland habitat were lost to farming, road building, and urban development.

But restoration efforts like Barb and Wayne Cunningham's [see Habitat Heroes on Page 19] are good news for Missouri's wetlands. The Missouri Department of Conservation, other state and federal agencies, conservation organizations, agricultural producers, and private landowners are working together to restore and manage thousands of acres of wetlands on private and public land.

As a result, wetland-dependent species have responded positively. Today, wetland complexes along the Mississippi and Missouri rivers and their tributaries are recognized for their continental significance to waterfowl, water birds, and land birds. In addition, efforts to restore connectivity to floodplains have helped struggling river fishes like sturgeon and paddlefish. Newly restored wetlands are helping declining frog and salamander populations increase their numbers.

IF YOU'RE A DUCK HUNTER, BIRDER, OR WILDLIFE enthusiast, you're familiar with wetlands' beauty and astonishing natural diversity. In addition, wetlands are a kind of habitat that most Missourians and Missouri wildlife can't do without.

As sponges, filters, and buffers, wetlands absorb floodwaters, protecting farmland and cities from inundation, and they filter pollutants and nutrients from storm water. Water quality is one of the most important reasons to care about wetlands. They also help support many birds, bats, and insects that play important roles in pollinating and providing pest control for native plants and crops.

Like coastal estuaries, inland wetlands are wildlife nurseries. Hundreds of species of wildlife depend on these areas to nest and spawn every year. In our state, wetlands host at least 110 of the more than 430 bird species recorded in Missouri for part of their life cycle. Over 200 Missouri species of conservation concern use wetlands as their primary habitat. The staggering amount



Habitat **HEROES**



Wetland Services Biologist Mike McClure has been advising landowners Wayne and Barb Cunningham about their wetland management for several years.

In Chariton County, Barb and Wayne Cunningham and their brothers have been working with Department Wetland Services Biologist Mike McClure and other Natural Resources Conservation Services (NRCS) Wetland Emphasis Team members to restore wetlands on more than 650 acres of their land. It's not far from Swan Lake National Wildlife Refuge, and it lies along Yellow Creek in the lower Grand River basin.

"We're kind of wildlife refuge manager wannabes," Barb Cunningham says. "Swan Lake was a big deal to us. We were very much inspired by seeing what Swan Lake managers did."

"In 1990, we had an opportunity to get our first marsh. Then the Wetland Reserve Program came, and that's when we signed most of it into the easement program. We stretched ourselves to expand when opportunities arose, and we've turned it into something we're pretty proud of."

Missouri has Five General Kinds of Wetlands

Wetlands are natural communities that result when permanent or periodic saturation robs the soil of oxygen so that only water-tolerant plants can live there. Plants and animals living in oxygen-poor wetland communities have specific adaptations to help them deal with ever-changing water levels. Scientists group wetland types according to differences in soils, water presence and duration, and wetland plants. Specific wetland animals then take advantage of these different habitat characteristics.

Seasonal

These wetlands typically hold water in the fall through spring and dry up in summer. Some occur in river floodplains, where they produce plants such as smartweeds and wild millet that provide important food sources for migrating waterfowl. Fishless wetlands can also form in upland depressions, serving as important larval nurseries for frogs, toads, and salamanders.

Emergent Marsh

These semi-permanently flooded wetlands feature soft-stemmed plants like reeds, sedges, and smartweeds. They provide important habitat for amphibians, reptiles, dragonflies, muskrats, wading birds, and other wildlife.

Shrub-Scrub

Basin-like depressions with poorly to very poorly drained soils receive periodic flooding. Shrubs and small trees like buttonbush, black willow, and swamp privet dominate. A variety of amphibians, reptiles, migrating songbirds, and other wildlife depend on them for roosting cover, foraging, and breeding habitat.

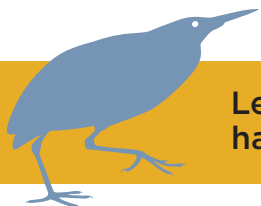
Forested Swamp

Trees and shrubs such as bald cypress, water tupelo, and overcup oak that are adapted to alternating periods of flood and drought typify this kind of swamp. Green treefrogs, western mud snakes, wood ducks, hooded mergansers, warblers, barred owls, and other wildlife depend on forested swamps for habitat.

Fen

These unique wetlands found in the Ozark Highlands and Central Till Plains ecoregions are created by constantly seeping mineralized groundwater. Typically small-patch communities, they are nonetheless quite diverse. Plants include swamp wood betony and a number of sedge and rush species. Fens are primary habitat for the gray petaltail dragonfly and the federally endangered Hine's emerald dragonfly. ▲

Bonnie Chasteen is the Conservationist's associate editor. The clay soil in her yard holds water and grows sedges just fine. She is in the process of installing several rain gardens.



Learn more about Missouri's wetland habitats at short.mdc.mo.gov/ZJ6



Small-mouthed salamander



A host of water birds and numerous fishes use shrub-scrub wetlands. A wide range of wetland vegetation including perennial smartweeds, rice cutgrass, beggar ticks, and sedges can be found, along with scattered groupings of willows and buttonbush.



Emergent marshes like those found at B.K. Leach CA have different vegetation zones based on patterns of water depth and soil types. Bitterns and rails use the area during migration and for breeding habitat.



Reconstructed seasonal wetland systems like those at Prairie Fork CA provide habitat for migrating soras, yellow rails, mallards, digger crayfish, and small-mouthed salamanders.



American bittern



Historically, 2.3 million acres of forest covered the Mississippi lowlands of southeast Missouri. Only a fraction of that remains today. The Mingo Basin represents over half of this remaining bottomland habitat that provides for a host of wildlife, including both nesting and migrant waterfowl and forest birds.



Grasshopper Hollow Natural Area contains the largest known fen complex in unglaciated North America, and management work here directly benefits many plants and animals of conservation concern.

Wetlands

WRE Makes it Permanent

Operated by the United States Department of Agriculture/NRCS, the Wetlands Reserve Easement program (WRE) helps cropland owners turn flood-prone acres back into wetlands. Landowners who enter into WRE agree to a perpetual easement that protects their land's wetland values, regardless of who owns the land in the future.

In addition to a one-time payment equal to fair-market value of cropland or timber (depending on the kind of acres enrolled), participating landowners get help with wetland restoration costs, which are covered by NRCS.

McClure explains why WRE is such a good deal. "Farming flood-prone land is expensive. When we help farmers turn those acres back into wetlands, everybody comes out money ahead, and wild-life benefit, too."

The Cunninghams appreciate the help. "In the beginning," Barb Cunningham says, "we were high on enthusiasm but short on knowledge. Now we feel like we're doing the best we can to be the best caretakers. It's only yours as long as you're here."



■ Wetland Conservation Opportunity Areas
■ North American Waterfowl Management Plan
Continentially Significant Migratory Waterbird Habitats

Wetland conservation opportunity areas are places that offer some of the greatest potential for landowners and other conservation partners to do the most good for Missouri's wetland habitats and the fish and wildlife that depend on them. Whether your land lies along a big river or hosts a small fen, you can get help and funding to manage your wetland acres.

Wetland Plants and Animals of Greatest Conservation Need



Three-toed amphiuma



Strawberry bush



Digger crayfish



Sora



Do You Have a Wetland?

If you have acres that were formerly wetland or are currently degraded wetland, you may be eligible for help restoring them. Here are some general clues to tell if your land is a wetland or has wetland potential.

Is the area wet?

Land has to be wet at least some of the time in order to be classified as a wetland.

Does your soil hold water or have the capability to do so?

Wetlands require a certain percentage of the soil be hydric. This means it has the ability to hold water, as do soils having high clay content.

Do the plants love water?

Tree species like green ash and willows are great indicators, while annual and perennial plants like smartweeds, millets, and sedges are also signals that you may have a wetland on your property.

Do you see wetland wildlife?

The presence of reptiles, amphibians, and waterfowl are an excellent way to help you determine whether or not you are dealing with a true wetland.

If you are able to identify some of the factors listed above, it may be worth calling your county's field practitioner to take the next step. Find Missouri Department of Conservation regional office phone numbers on Page 3.



Visit Public Wetlands

Discover and explore all of Missouri's beautiful public wetlands. Just visit mdc.mo.gov/atlas and browse by natural feature.



Water canna



Swamp rabbit

AMPHIBIUM: JIM RATHER; STRAWBERRY BUSH: JOHN D. BYRD, MISSISSIPPI STATE UNIVERSITY, BUGWOOD.ORG; DIGGER CRAYFISH: CHRIS LUKHAUP; SORA: NOPPADOL PAOTHONG; WATER CANNA: COURTESY MISSOURI BOTANICAL GARDEN
PLANT FINDER: TAMMY PALMIER; SWAMP RABBIT: CHARLES SCHWARTZ



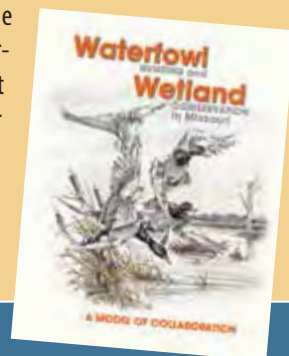
NOPPADOL PAOTHONG

Rain Gardens Are Wetlands in Miniature

Even if you don't farm, you can attract wetland critters like frogs, turtles, and salamanders to your yard. Create an easy-to-build rain garden. Find design plans and species lists at short.mdc.mo.gov/ZoZ.

Waterfowl and Wetland Conservation in Missouri

Discover the unique history of the Missouri model of wetland and waterfowl management in this large format and richly illustrated book. Available for \$40 at short.mdc.mo.gov/Z46. All proceeds support wetland and waterfowl conservation in Missouri.





Cooking *Wild* For the Holidays

PHOTOGRAPHS BY BERNADETTE DRYDEN

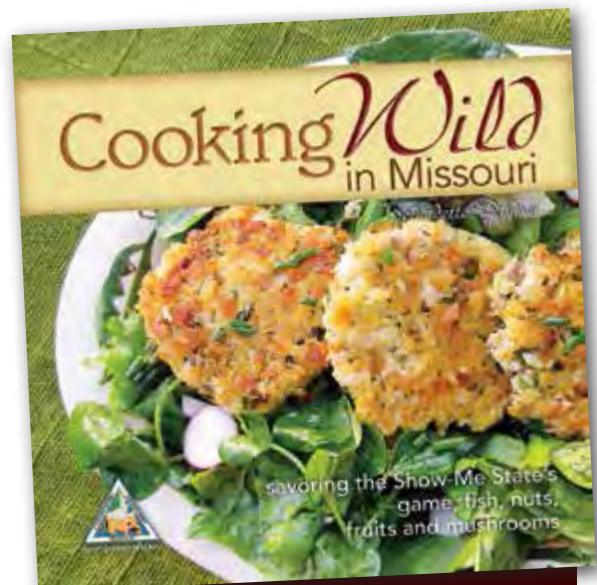
December is a great month to try recipes from the Missouri Department of Conservation's popular cookbook

WITH THE BOUNTY OF THE HARVEST seasons crowding our freezers and the calendar filling with holiday gatherings, December is a great month to try recipes from *Cooking Wild in Missouri*, the Missouri Department of Conservation's bestselling cookbook.

The book's author, retired Department Publications Supervisor Bernadette Dryden, is an accomplished cook and dedicated lover of local food traditions. With *Cooking Wild*, she aimed to give Missourians a collection of recipes for cooking native foods in a variety of ways.

"I have reinterpreted and included dishes that reflect the diversity of many cultures," Dryden said. "Missouri's game, fish, nuts, fruits, and mushrooms adapt beautifully to recipes from Argentina to Zambia."

Exotic or down-home, the recipes we've chosen for this feature are tasty, attractive, and easy to carry to gatherings. Happy holiday cooking!



A Great Gift for Your Favorite Foodie

Pick up copies for the cooks on your holiday shopping list at your regional office or nature center, or order online at mdcnatureshop.com for \$15.



Venison Bierocks

Venison Bierocks (*meat-stuffed buns*)

Makes 24 buns

Dough

1 cup milk
½ cup sugar
1 teaspoon salt
½ cup vegetable oil
1 package yeast
1 cup lukewarm water
1 egg
6 cups flour (I like one-third whole wheat)

Filling

1 pound venison, ground
2 tablespoons butter
1¼ cups chopped onions
2 large garlic cloves, minced
5 cups cabbage, chopped (about half a good-sized head)
1½ teaspoons caraway seeds
2 teaspoons sugar
2 teaspoons vinegar
1¼ teaspoons salt
¾ teaspoon coarsely ground pepper
¼ cup water
2 teaspoons flour

Dijon, other good-quality mustard

Make the dough

Scald milk; add sugar, salt, and vegetable oil, then cool in large bowl. Dissolve yeast in lukewarm water in separate small bowl. Add to milk mixture and stir in beaten egg. Add 3 cups flour and mix until smooth. Work in remaining flour or enough to make an easily handled dough. Knead well (8 to 10 minutes). Place the ball of dough in an oiled bowl, turning to coat with oil. Cover and let rise in a warm place until doubled in bulk (1½ to 2 hours). Punch down and let rise again for 30 to 45 minutes.

Make the filling

Brown meat in a large sauté pan, drain, and set aside in a bowl. Melt butter in same pan and sauté onions and garlic until soft. Remove from pan and add to the meat in the bowl. Add cabbage to the sauté pan along with the next six ingredients (through water). Cover pan and cook at a lively simmer for 10 to 12 minutes, stirring several times. Drain juices, add flour, and stir well. Add meat, onions, and garlic. Season to taste with more salt and pepper, if desired. Mix thoroughly and let cool.

Stuff the dough

Preheat oven to 350°F. Roll dough into a large square, about ¼-inch thick. Cut into 4-inch squares, and keep covered with a cloth as you work. Mound ¼ cup filling onto the middle of each square, bring opposite corners together and pinch seams firmly to form either a square or a circle, to your liking.

Set buns, with smooth side up, on 2 greased baking sheets and let rise about 30 minutes. Bake 15 to 20 minutes until nice and brown. Brush lightly with butter. Cut in halves, if you like, and slather with a good sturdy mustard.



Trout in Saor (*trout in the style of Venice*)

Serves 4 as a first course

1 pound trout fillets
½ cup flour
¼ cup vegetable oil
Salt
2½ tablespoons extra-virgin olive oil
1 onion, sliced
¾ cup red-wine vinegar
1 teaspoon sugar
Pinch cinnamon
Pinch freshly ground black pepper
¼ cup pine nuts, toasted
¼ cup golden raisins, soaked in lukewarm water
Parsley and lemon slices for garnishing, if desired

Wash and dry fillets; dredge in flour to coat well on both sides. Fry fish in very hot vegetable oil until crisp and golden, turning once. Place on paper towels and season with salt.

Drain remaining vegetable oil from skillet and clean the pan with a paper towel. Lower heat to medium. Pour in olive oil, and, when heated, fry onion until translucent. Stir in vinegar, sugar, cinnamon, and pepper. Boil for a minute or so, then remove from heat.

Arrange fillets in 2 layers in a glass dish, scattering pine nuts, drained raisins, and onion mixture atop each layer. Marinate in the refrigerator for at least 24 hours. Serve at room temperature as an appetizer or first course.



Boone County Burgoo *with squirrel*

Serves 6 to 8

2 pounds squirrel meat (about 4 squirrels)
 2 tablespoons vegetable oil
 6 cups water
 1 cup white hominy
 1½ cups lima beans (or other dried beans)
 1 cup diced potatoes
 2 carrots, diced
 2 stalks celery, chopped
 1 cup chopped onion
 1 bay leaf
 1 cup sliced okra (or fresh green beans)
 1 to 2 red bell peppers, diced (or combination of sweet and hot roasted peppers)
 1 28-ounce can diced tomatoes
 1 cup fresh corn kernels
 1½ to 2 teaspoons salt
 ½ teaspoon (or more) coarsely ground black pepper
 ½ to 1 teaspoon chile powder (depending upon desired heat)
 ½ teaspoon red-pepper sauce, such as Tabasco
 1 teaspoon Worcestershire sauce

Clean 3 or 4 squirrels to obtain 2 pounds of meat on the bone. Rub the meat with salt and pepper and broil the whole squirrels for about 30 minutes (keeping squirrels about 8 inches from the heating element). Turn halfway through to brown both sides. Alternatively, you may put your squirrels in a large pot, cover them with water, and boil them for 2 to 3 hours (older squirrels take longer to cook until tender). Debone and cut into bite-sized pieces.

Heat oil in the bottom of a big pot and brown squirrel pieces for 4 or 5 minutes, turning them frequently. Add water to the pot and then the hominy, lima beans, potatoes, carrots, celery, onion, and bay leaf. Simmer for 1 hour and skim off grease (if any).

Add okra, bell pepper, tomatoes, corn, salt, pepper, chile powder, Tabasco, and Worcestershire sauces. Bring the stew back to a boil, stir well, and reduce heat. Simmer, partially covered for 2 more hours or until it is as thick as you like.

Wild-Turkey Dropped-Biscuit Pie

Serves 4

3 to 4 pounds of wild turkey meat on the bone

Sauce

3 tablespoons butter
3 tablespoons flour
1 cup cream

Dough

2 cups flour
1 teaspoon salt
2 teaspoons baking powder
2 tablespoons butter
1 egg, beaten
1 cup milk
Coarsely ground black pepper

Cover turkey in water and bring to a boil. Turn down the heat and simmer until tender. Remove meat from broth, cool, and cut into 1-inch chunks or shred if preferred. Reserve broth.

Grease a Dutch oven or other casserole dish with a light coating of butter. Add turkey to the dish.

Make sauce

In a medium saucepan melt butter, whisk in flour, and stir until well combined. Add 3 cups turkey broth and cream. Whisk, salt to taste, and cook until it is a smooth sauce. It will be quite thin, but will thicken when baked with turkey. Pour sauce over turkey.

Make biscuit dough

Preheat oven to 350°F. Combine flour, salt, and baking powder in a medium bowl and stir well. Rub 2 tablespoons butter into flour mixture until combined. Add egg and milk; mix well. Drop batter by heaping tablespoonfuls (12 to 16) over entire surface area of turkey/sauce. Bake for approximately 1 hour or more until biscuits are nicely browned. Sauce will appear thin when you remove the dish from the oven. However, it will thicken nicely if you allow the dish to cool for a few minutes before spooning it into shallow bowls. Grind a few twists of fresh black pepper atop and serve.

Accompany with lightly steamed broccoli or a salad of mixed, fresh greens. An unoaked Chardonnay accompanies nicely.

use the whole bird

Although the breast is the prime choice on a turkey, the remaining meat can be used as a base for a flavorful soup or for any other number of dishes, including this one. Considering the patience and skill required to bag this bird, it's a shame to use the breast and throw out the rest.



Black-Walnut Chocolate Biscotti

Makes about 3 dozen cookies

2½ cups flour
1 cup sugar
1 teaspoon baking soda
½ teaspoon salt
¼ teaspoon cinnamon
¼ teaspoon ground cloves
2 tablespoons unsweetened cocoa powder
2 tablespoons grated fresh ginger root (peeled)
½ teaspoon vanilla
3 eggs
1 cup black walnuts (toasted lightly; skins removed as much as possible and chopped coarsely)
¼ cup almonds, toasted lightly and coarsely chopped

removing walnut skins

While the nuts are still hot from toasting, wrap them in a tea towel and rub them lightly against each other to remove as much skin as possible. Then proceed with chopping.

This batter can be mixed in a large bowl by hand, but is much easier with a food processor or large electric mixer. Blend dry ingredients (flour through cocoa powder) until mixture is well combined. In a small bowl, whisk together the ginger root, vanilla, and eggs; add to the dry ingredients, beating until a dough is formed. Stir nuts in by hand.

Preheat oven to 350° F. Turn dough out onto lightly floured surface and knead several times. Divide into thirds. Butter and flour baking sheet. With floured hands, form each piece of dough into a 10- by 2½-inch log. Flatten lightly with hands. Arrange logs on sheet 4 inches apart.

Bake for 25 minutes. Let cool on baking sheet on a rack for 10 minutes. Remove logs from sheet and cut each crosswise on the diagonal into ¾-inch-thick slices. Arrange biscotti, cut sides down, on two baking sheets and bake for 5 minutes on each side. Transfer biscotti to racks to cool. Store in airtight containers. Will keep for two weeks.



Optional glaze

I like to dress up my biscotti by zigzagging chocolate down the lengths or by dipping the ends in chocolate. Here's how: Melt 3 ounces of high-quality dark chocolate and 2 tablespoons unsalted butter together over low heat. Remove from heat and add 2 tablespoons corn syrup (and just a touch of your favorite liqueur, if desired). Stir well and fill a pastry bag fitted with a small, round tip.

After cookies are cooled, squeeze chocolate through the pastry bag's tip in thin ribbons down the length of the cookie. Alternatively, dip ends in the warm chocolate and shake gently to remove excess. Dry thoroughly on racks before storing. ▲

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You had fun hunting, catching, or gathering your harvest — now have more fun cooking and eating it. Browse more recipes for Missouri's wild game and edibles at short.mdc.mo.gov/ZJY.



Blue Jay

THE BLUE JAY (*Cyanocitta cristata*) is one of Missouri's most attractive and recognizable songbirds, with its powder-blue to periwinkle-blue plumage and soft-gray and white belly. The wings and tail feature brilliant white accents and black laddering. A black bridle about the head and face extends along the nape to the tip of a prominent crest. Although most Missourians take this common bird for granted, think how remarkable a blue jay would appear to somebody who has never seen one.

Blue jays are not the most beloved of birds, as they are often aggressive toward other songbirds, especially around feeders. I will admit that I had great disdain for blue jays as a boy growing up in the Missouri Ozarks. Every time I went frog hunting, the local jays began anxiously calling as I neared our pond. I was convinced that they were warning the frogs of my approach. As I grew older, my contempt for blue jays shifted to respect as I better appreciated their social behavior, such as the mobbing of hawks and owls and their extreme wariness, which makes them one of Missouri's most difficult birds to photograph.

The blue jay is listed as a common permanent resident throughout Missouri, and it is found in forests, woodlands, parks, and most backyards where trees are present. The blue jay diet consists mostly of acorns, fruits, and seeds, but they may also feed on insects, carrion, and even the eggs and young of nesting songbirds. Blue jays produce a variety of sounds from a loud, raspy "jay" call to piping notes that are very soothing. They often mimic the sound of predators to frighten other songbirds away from nests or bird feeders. I have been fooled more than once as a blue jay perfectly mimicked the call of a red-shouldered hawk.

Blue jays usually form lifelong monogamous pairs and breed in spring to the middle of summer. Usually four to five eggs are laid in a cup-shaped nest about 20 feet above the ground. Eggs hatch in 16–18 days, and the young fledge approximately three weeks later. Family groups travel and forage together for the rest of the season, with the young dispersing in wintertime. Last summer, I observed a mama blue jay doting over five needy fledglings. I was impressed by her patience as the hungry juveniles followed her everywhere, constantly begging for food with loud "jay" calls. The mother diligently collected morsels for her brood, ensuring that each individual received its share.

Blue jays are known for complex social behavior, similar to crows. Their gregarious nature is best observed when the opportunity to harass a hawk or owl arises. Recently I watched a large group of blue jays mobbing a pair of Cooper's hawks at my pond, fiercely striking the unwelcome raptors with their wings and feet. As I watched the blue jays work together to put the hawks on notice, I thought of the patient mother jay gently caring for her brood. Revered by some and disliked by others, the blue jay will always be a prominent member of Missouri's bird world.

—Story and photograph by Danny Brown

 500mm lens +1.4 teleconverter • f/5.6 • 1/125 sec • ISO 400



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Visit mdc.mo.gov/field-guide to learn more about Missouri's plants and animals.



Huzzah Conservation Area

This 6,255-acre area in Leasburg offers hiking, canoeing, camping, hunting, fishing, trapping, bird watching, and an unstaffed shooting range.

LOCATED IN CRAWFORD County, Huzzah Conservation Area offers a variety of activities for outdoor enthusiasts seeking a wintertime adventure. The area's 6,255 acres are primarily woodland and forest with several wildlife openings and over 30 small fishless ponds. Deer, turkey, songbirds, bald eagles, and squirrels are common on the area.

Hikers can enjoy a quiet and serene journey along the 7-mile Colonel Plassmeyer Wildlife Viewing Trail. This natural surface trail is the northernmost section of the Ozark Trail. The trail is not a loop, is moderately difficult, and requires wading across the Courtois Creek. Hikers can expect to experience the rugged Missouri Ozarks and enjoy sheer cliffs, bluffs, caves, and scenic vistas. Bald eagles are very common in the winter months and can be seen soaring along the major river ways.

Three major waterways, Meramec River, Huzzah Creek, and Courtois Creek, traverse the area, providing access to beautiful Ozark streams. The mild bluebird days of late winter are a perfect time for a peaceful and picturesque canoe trip on any of these rivers. In contrast to the bustling float crowds of the summer months, expect to be the only boat on the water.

The area is rich in cultural resources and provides a glimpse back to a time when mining camps dotted the landscape. Remnants of the Scotia Furnace and Iron Works are located on the area. The Scotia Furnace, built by John G. Scott, Robert Anderson, Thomas Howard, and Anvil James, produced pig iron from 1870 to 1880.



16–35mm lens • f/8 • 1/100 sec • ISO 200 | by David Stonner

The area offers an unstaffed shooting range, with shooting benches at 25, 50, and 100 yards. This range is an ideal location to practice or sight-in hunting rifles. Paper targets and target holders are provided. The range is open Tuesday through Sunday from sun up to sunset. The range is closed on Mondays for routine maintenance.

A small primitive campground is available along the banks of the Courtois Creek. The camping area is open between Sept. 15 and May 15. No reservations are necessary and campsites are on a first-come, first-served basis. There is pit latrine and a trash dumpster in the camping area, but electric and water are not available.

The area is located 5 miles south of Leasburg on Highway H. There are nine small parking lots that provide access to the area's unique features.

—Mark Johanson, area manager



Huzzah Conservation Area

Recreation Opportunities: Wildlife viewing, bird watching, hiking, hunting, fishing, canoeing, camping

Unique Features: Woodland, forest, fishless wildlife ponds, old fields, bluffs, caves, cliffs, remnants from the Scotia Iron Works

For More Information: Call 636-441-4554 or visit mdc.mo.gov/a5702



MDC DISCOVER nature

To find more events near you, call your regional office (phone numbers on Page 3), or visit mdc.mo.gov and choose your region.

NATURE AND THE ARTS: AN EVENING WITH TIM ERNST AND EVENING STROLL

DEC. 2 • FRIDAY • 5–6 P.M. OR 7–8 P.M.

Southwest Region, Springfield Conservation Nature Center, 4601 S. Nature Center Way, Springfield, MO 65804

Registration required, call 417-888-4237

Ages 12 and older

Nationally known nature photographer Tim Ernst returns to share his stunning images set to music for two programs. In addition, a book signing will be held from 6–7 p.m. and 8–9 p.m. Before or after the program, enjoy a stroll on the trails and spend time in the exhibits and gift shop. Everything will be open from 6–9 p.m. Bring a flashlight for the stroll.

LET'S GET CRAFTY!

DEC. 10 • SATURDAY • 10–11:30 A.M.

St. Louis Region, St. Louis Regional Office, 2360 Hwy D, St. Charles, MO 63304

Registration required, call 636-441-4554

Ages 6 and older

Spend a chilly morning indoors with us, creating pinecone critters and learning how animals are surviving the frigid cold without heaters.

BUCK, BUCK, MOOSE: BIG GAME COOKING WITH HANK SHAW

DEC. 12 • MONDAY • 7–8:30 P.M.

Kansas City Region, Anita B. Gorman Discovery Center, 4750 Troost Ave., Kansas City, MO 64110

No registration required

Adults

Are you a hunter or curious about how to prepare wild game? Then this is the program for you. Hank Shaw, 2013 James Beard Award winner for best food blog and author of *Buck, Buck, Moose: Recipes and Techniques for Cooking Deer, Elk, Moose, Antelope, and Other Antlered Things*, will present a colorful program on how to get the most out of your big game animals. From how to properly handle the animal in the field to getting the best-tasting dishes out of every last morsel, Hank captures it all in his laid-back style.



5 IDEAS FOR FAMILY FUN

CANDLELIT WOODS WALK

DEC. 16 • FRIDAY • 5–8 P.M.

Southeast Region, Cape Girardeau Conservation Nature Center, 2289 County Park Drive, Cape Girardeau, MO 63701

No registration required

All ages

Enjoy the serenity of a winter night as you stroll along our trail. We'll light the path for you and provide hot winter beverages for your enjoyment. After your walk, stop inside the nature center to warm up and view our exhibits. Our trail is paved and accessible to wheelchairs and strollers.

2016 HOLIDAY HAPPENINGS

DEC. 27–29 • TUESDAY–THURSDAY

10 A.M.–3 P.M.

Central Region, Runge Conservation Nature Center, 330 Commerce Dr., Jefferson City, MO 65109

No registration required

All ages

You're invited to an open house at Runge Conservation Nature Center. Enjoy refreshments, stories by the fire, nature walks, crafts, and much more.



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I Am Conservation

Tim Reger, center, poses at Fountain Grove Conservation Area near Meadville with his son Jeff (right) and his grandson Trevor. "I shot my first duck in 1957," said Tim. "I was 11 years old, hunting with my dad, my brother, and my dad's friend Guy Sommerville. Guy was a great duck caller and seeing him calling in ducks was amazing to me. Duck hunting has become a big part of my life." Tim joined Ducks Unlimited (DU) in 1969, and was asked to help start a DU chapter in Chillicothe in 1972. "Forty-five years later, I still work on the committee and our chapter is still going strong," said Tim. "We have raised about \$1.3 million for ducks in our 45-year history." Tim's son and grandson both started hunting with him at a young age. "Duck hunting with my son and grandson is important because we spend time with each other," said Tim. "We love the outdoors and our time in the blind." Fountain Grove is also a special place for the family. Tim noted it was the first waterfowl area the Department built back in 1947. "I first hunted there in 1965," said Tim, who is proud of the contribution he made to the area's Golden Anniversary Wetlands Initiative, which significantly renovated and improved habitat and facilities at the area. "To me, it's a special place and one all Missouri people should be proud of." —*photograph by Noppadol Paothong*